

# Work Order ID 52740

October 13, 2009 2:20:06 PM



Page 1

Item ID: D212-664-201TRN

Accept



Setup Start



Revision ID: C

Stop



Item Name: Crosstube Turning Detail

Start Date: 13/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 30/10/2009 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan: PP

Date: 09-10-13

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
<b>Draw Nbr</b>	<b>Revision Nbr</b>								
D212-664-241	Rev C								
100	MORI SEIKI CNC LATHE LARGE	0.00							
	Mori Seiki								
Mori Seiki CNC Lathe Large	Memo	0.00							
	1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA114□2-Turn first side as per Folio FA114□3- File transition lines smooth.								
110	QC1- Inspect dimensions to dimension sheet	0.00							
	QC								
Quality Control	Memo	0.00							
120	MORI SEIKI CNC LATHE LARGE	0.00							
	Mori Seiki								
Mori Seiki CNC Lathe Large	Memo	0.00							
	1-Turn second side as per Folio FA114□2- File transition lines smooth.□3- Remove sand and plugs□4- scribe batch # and part # as per dwg								

an 09-10-15①

an 09-10-15①

an 09-10-15①

**Work Order ID 52740**

Page 2

October 13, 2009 2:20:07 PM

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Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130

QC1- Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

Q.A. 09-10-15①

140

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

1 / 0 - AWM 9-10-15

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

Chemical Conversion Coat as per within 24 hours of machining

Q.A. 09-10-15②

# Work Order ID 52740

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Page 3

Item ID: D212-664-201TRN

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Setup Start



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Stop



Item Name: Crosstube Turning Detail

Start Date: 13/10/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 30/10/2009 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

① JE 09-10-16

170

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and stock in kanban rack □ Location: P2

G.m 09-10-16 ②

180

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

09/10/16 MF  
09-10-16

# Picklist Print

October 13, 2009 2:20:06 PM

Page 1

Work Order ID: 52740



Parent Item: D212-664-201TRNRevC



Parent Item Name: Crosstube Turning Detail

Start Date: 13/10/2009

Required Date: 30/10/2009

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	--------------------------	---------------	----------------	--------

D6006-129RevA

Manufactured

No

120

Each

60.0000

1.0000



Crosstube Material



a.m 09-10-15(1)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

60

23970

2

26550

15

34690

11

38338

32

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
1

<b>DART AEROSPACE LTD</b>	<b>Work Order:</b>	52740
<b>Description:</b> Crosstube Assembly (205/212 High Aft)	<b>Part Number:</b>	D212-664-241
<b>Inspection Dwg:</b> D212-664-241 <b>Rev:</b> C		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	0.200	/			
	R0.063	+/-0.010	R0.063	/			
	2.990	+0.005/-0.000	2.993	/			
	5.237	+/-0.030	5.243	/			
	2.600	+0.005/-0.000	2.605	/			
	2.686	+0.005/-0.000	2.691	/			
	2.770	+0.005/-0.000	2.775	/			
	2.854	+0.005/-0.000	2.859	/			
	2.938	+0.005/-0.000	2.943	/			
	3.021	+0.005/-0.000	3.026	/			
	3.133	+0.005/-0.000	3.137	/			
	3.179	+0.005/-0.000	3.184	/			
SIDE B	0.200	+/-0.010	0.200	/			
	R0.063	+/-0.010	R0.068	/			
	2.990	+0.005/-0.000	2.994	/			
	5.237	+/-0.030	5.243	/			
	2.600	+0.005/-0.000	2.605	/			
	2.686	+0.005/-0.000	2.691	/			
	2.770	+0.005/-0.000	2.775	/			
	2.854	+0.005/-0.000	2.859	/			
	2.938	+0.005/-0.000	2.943	/			
	3.021	+0.005/-0.000	3.026	/			
	3.133	+0.005/-0.000	3.137	/			
	3.179	+0.005/-0.000	3.184	/			
	124.36	+/-0.020	124.360	/			

<b>Measured by:</b>	GA	<b>Audited by:</b>	AWM	<b>Prototype Approval:</b>	N/A
<b>Date:</b>	09-10-15	<b>Date:</b>	9-10-15	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-201)	KJ/JLM	
B	06.03.09	Tolerance for 5.237 was +/-0.001	KJ/JLM	
C	07.05.08	Dwg Rev. updated	KJ/JLM	

**DART**

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52740

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07.04.24 P  
PER EEN 035

**DEO ATTACHED**

DESIGN PH	DRAWN BY PH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED J	APPROVED [Signature]	DRAWING NO. D212-664-241	REV. C SHEET 1 OF 3
DATE 07.03.08		TITLE CROSSTUBE ASS'Y (205/212 HI AFT) NTS	
A	00.12.12	NEW ISSUE	
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
C	07.03.08	REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	

Qty	Part Number	Description
X	D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
1	D6006-129	CROSSTUBE
2	D2940-1	SUPPORT
4	D3595-063-530	RUBBER CUSHION
4	MS21920-28	CLAMP (OR MS21920-30)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

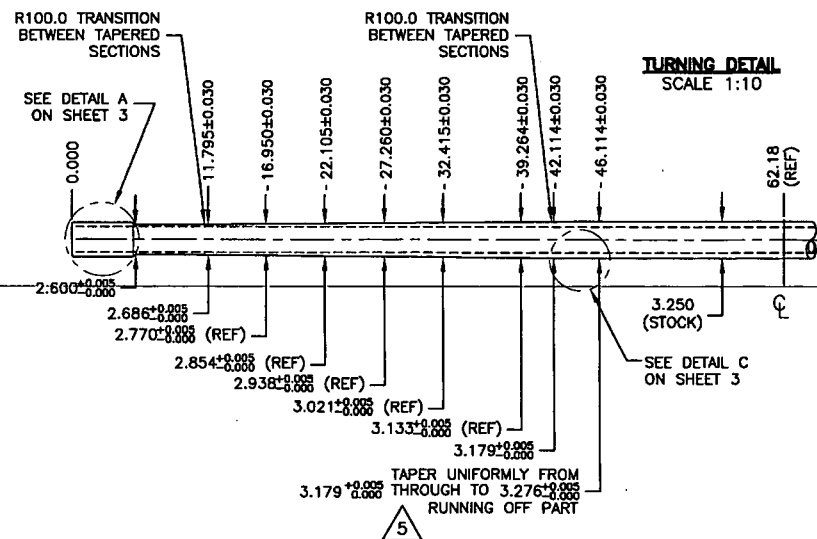
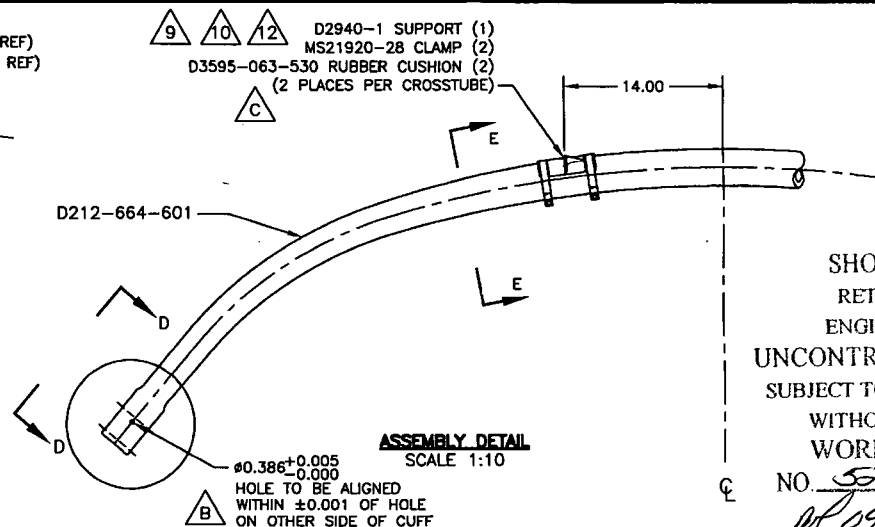
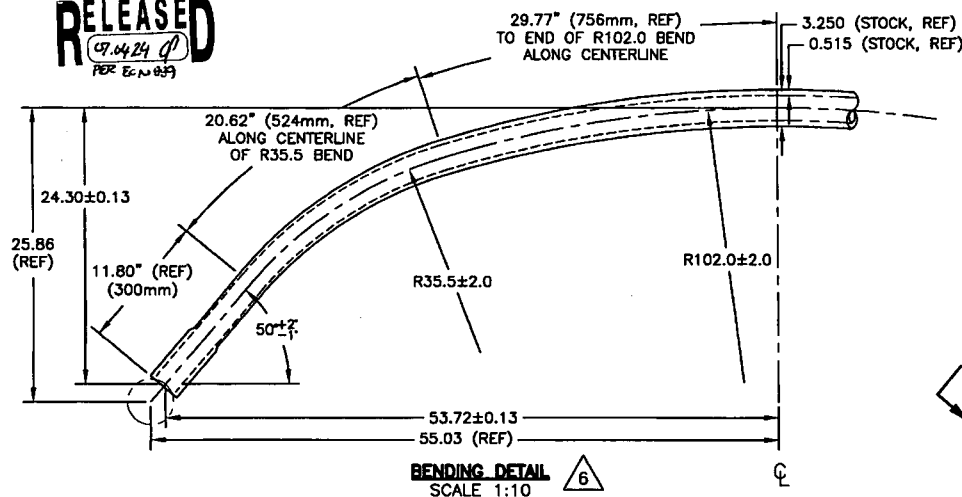
**GENERAL NOTES:**

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) MATERIAL: MANUFACTURED FROM D6006-129  
FINISHED LENGTH = 124.36±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 10) INSTALL MS21920-28 CLAMPS WITH D3595-063-530 RUBBER CUSHIONS TO SECURE D2940-1 SUPPORT ON TOP SIDE OF CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT  
**NOTE:** MS21920-30 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

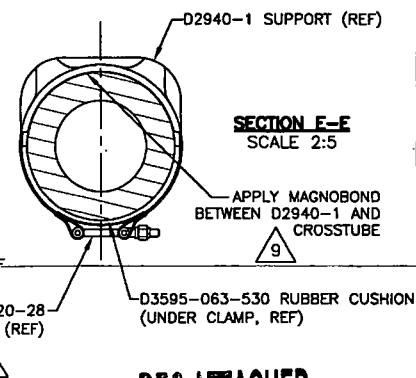
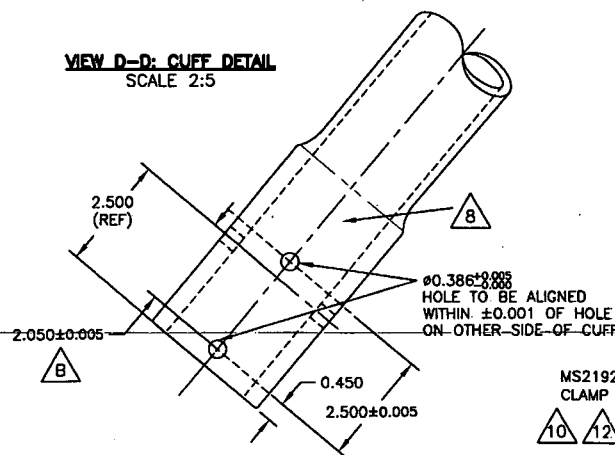
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07.04.24  
PER E-20-039



**VIEW D-D: CUFF DETAIL**  
SCALE 2:5



**DETACHED**

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CHECKED J	APPROVED J	DRAWING NO. D212-664-241	REV. C SHEET 2 OF 3
DATE 07.03.08	TITLE CROSSTUBE ASS'Y (205/212 HI AFT)	SCALE 1:10	

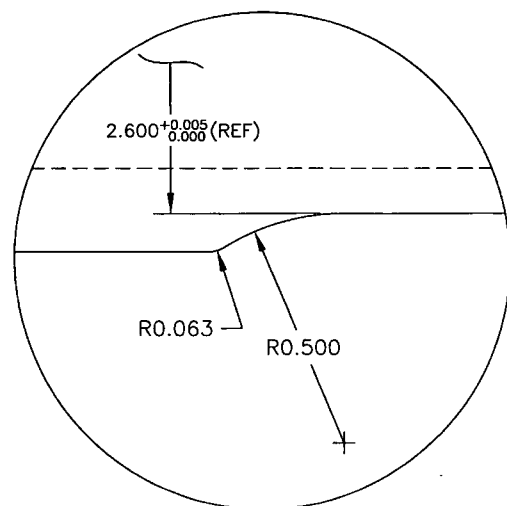
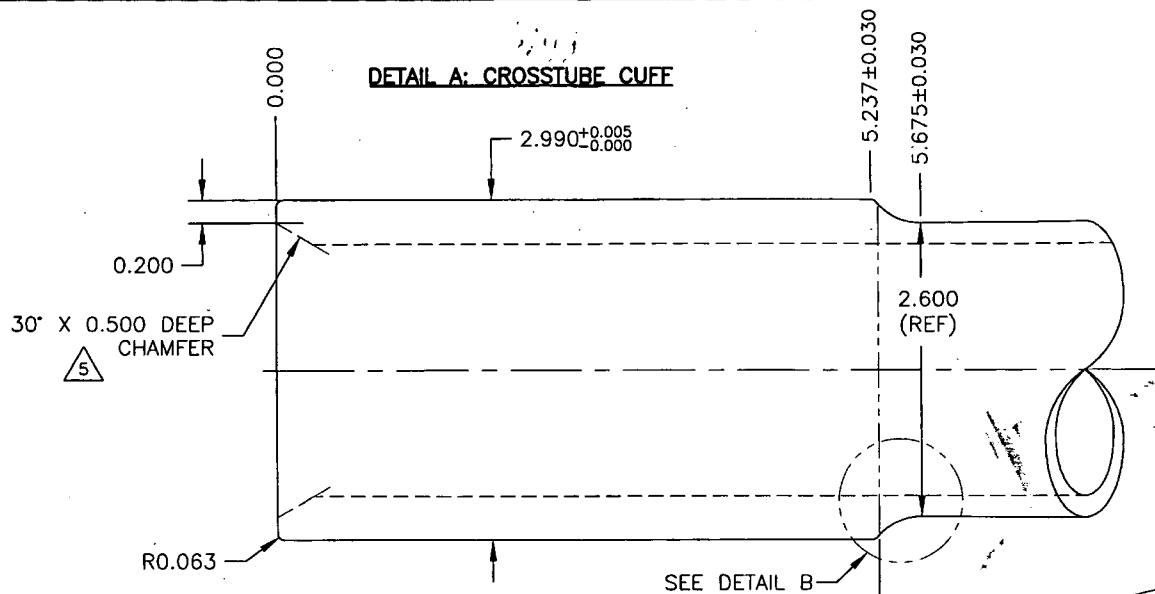
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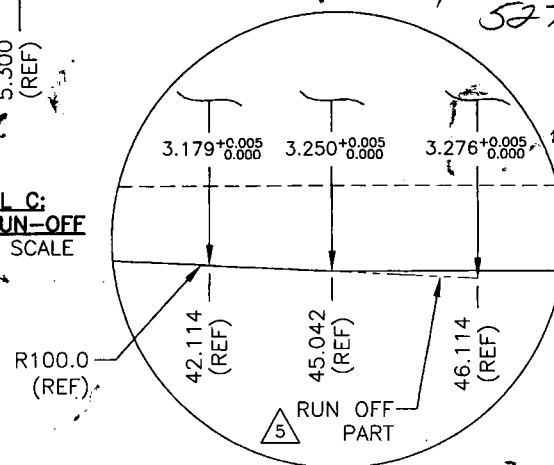
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**DETAIL C:  
TAPER RUN-OFF**  
NOT TO SCALE



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DESIGN <u>PH</u>	DRAWN BY <u>PH</u>	<b>DART</b> DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED <u>PH</u>	APPROVED <u>PH</u>	DRAWING NO. D212-664-241
DATE 07.03.08	TITLE CROSSTUBE ASS'Y (205/212 HI AFT)	REV. C SHEET 3 OF 3 SCALE 1:1



DRAWING NO. D212-664-241	TITLE CROSSTUBE	REV. C	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D212-664-241-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>UP</i>	CHECKED <i>RT</i>	MFG. APPR. <i>EQ</i>	APPROVED <i>MD</i>		DE APPR. <i>RT</i>		
DATE 09.05.01	DATE 09.06.15	DATE 09.06.15	DATE 09/06/16		DATE 09/06/16		

**CHANGE:**

ADD THE FOLLOWING CROSSTUBE ASSEMBLY:

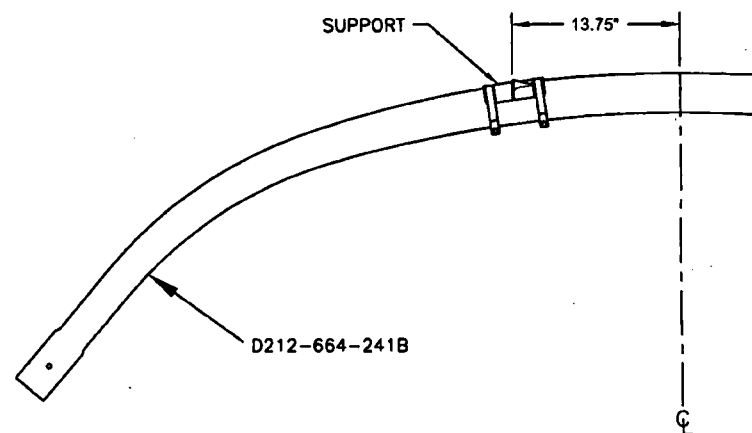
Part Number	Description
D212-664-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)

THE D212-664-241B CROSSTUBE HAS THE SAME PARTS LIST AS THE D212-664-241 CROSSTUBE. HOWEVER, INSTALL THE SUPPORTS AS SHOWN IN FIGURE 1 OF THIS ENGINEERING ORDER. THE NEW KIT IS OTHERWISE ASSEMBLED PER THE D212-664-241 CROSSTUBE.

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**FIGURE 1 - SUPPORT INSTALLATION**